



FEMA

October 30, 2013

Operating Guidance No. 13-13

For use by FEMA staff and Flood Hazard Mapping Partners

Title: Operating Guidance for Improving the Identification and Mapping of the Limit of Moderate Wave Action (LiMWA) on Regulatory and Non-Regulatory NFIP Products

Effective Date: October 30, 2013

Approval: Luis Rodriguez
Branch Chief, Engineering Management Branch
Risk Analysis Division
Federal Insurance and Mitigation Administration

Operating guidance documents provide best practices for the Federal Emergency Management Agency's (FEMA's) Risk MAP program. These guidance documents are intended to support current FEMA standards and facilitate effective and efficient implementation of these standards. However, nothing in Operating Guidance is mandatory, other than program standards that are defined elsewhere and reiterated in the operating guidance document. Alternate approaches that comply with program standards that effectively and efficiently support program objectives are also acceptable.

Background:

The Limit of Moderate Wave Action (LiMWA) has come to serve two purposes: 1) it indicates the location where coastal wave heights equal 1.5 ft under base flood conditions, and 2) it determines the landward limit of the "Coastal A Zone" (CAZ) as referenced in building codes and standards. Some building codes require VE Zone design and construction standards be met in the CAZ, thus, communities use the LiMWA to determine where these building requirements apply. Despite the fact that FEMA states the LiMWA is an informational layer, building codes rely on the LiMWA for regulatory purposes.

FEMA issued Procedure Memorandum No. 50 (PM 50), dated December 3, 2008, to set policy and procedure for identifying and mapping areas subject to wave height greater than 1.5 feet as an informational layer on Flood Insurance Rate Maps. The main purpose of PM 50 is to

differentiate the AE Zone areas subject to wave height between 1.5 and 3 feet from other AE Zone areas, with lesser or no wave action, on FIRMs.

Issue:

FEMA is the only agency that provides guidance on mapping the LiMWA. Since FEMA introduced the LiMWA in PM 50, it has received more visibility from the public, States and community officials. Also, experience gained in mapping the LiMWA since the issuance of PM 50 has raised some issues that need to be resolved in order to provide more clarity and confidence for both mapping partners and end users of this information. One of those issues concerns the use of wave height as a proxy for wave energy, and post-storm observations that suggest that moderate wave heights inland and along sheltered water shorelines are not as damaging as moderate wave heights along the open coast.

Actions Taken:

For all new detailed coastal studies within the Atlantic Ocean, Gulf of Mexico, Great Lakes, and Pacific Ocean regions, the guidance set forth here should be utilized when mapping the LiMWA.

1. The LiMWA should be delineated only in conjunction with a wave height VE Zone. If the wave height at a shoreline is less than 3 feet, no LiMWA should be drawn inland of that shoreline. For example, for transects that originate on the open coast and pass over land, across a water body, and then onto another land mass, multiple LiMWAs may be delineated, but only where there is a wave height VE Zone associated with a shoreline. In special situations it may be appropriate to map a LiMWA in an area where there is no VE Zone associated with the shoreline, these situations should be discussed with FEMA to establish best practice.
2. Only one LiMWA should be associated with each flood source and associated wave height VE Zone. In other words, if inland wave heights fluctuate above and below 1.5 ft (due to regeneration and dissipation), only one LiMWA should be drawn -- closest to the VE Zone. Special cases involving overland wave regeneration on long transects (without a secondary shoreline) should be discussed with FEMA to establish best practice for those situations.
3. The LiMWA should be mapped at the same time as the WHAFIS results, and where mapped, the LiMWA should be interpolated between transects and drawn in a manner consistent with the methods used to map overland wave height flood zone boundaries and gutters. Where possible, LiMWAs should not cross flood zone boundaries and gutters.
4. The LiMWA should not be shown on the FIRM in areas where the inland VE limit is delineated based on the Primary Frontal Dune (PFD) or wave runup and/or wave

overtopping. This may result in LiMWA segments, and a discontinuous LiMWA, on the FIRM. The LiMWA should not be shifted so as to be immediately landward of the mapped VE/AE Zone boundary. This guidance supersedes guidance in PM 50 which states it may be advantageous to continue the LiMWA across runup-dominated areas, and which states the LiMWA should be delineated immediately landward of the VE/AE Zone boundary in PFD and wave overtopping VE Zones.

5. The LiMWA should not be depicted within the following zones:
 - a. VE Zone
 - b. Zone X (shaded or unshaded)
 - c. AE Zone in which wave action does not exist such as an AE Zone with a BFE corresponding to the stillwater elevation

6. The use of non-regulatory products to assist communities with understanding wave hazards and enforcing Coastal A Zone building standards, especially when there is a desire to provide this information in the form of polygons, is highly recommended.

7. In order to make it more clear, a line with tick marks along the line that point in the direction of the Coastal A Zone could be used to show which side of the line higher standards should be applied. The following table describes the suggested line specifics and it can be modified by obtaining prior approval from the FEMA Project Officer for changes to the LiMWA symbology.

Example	Feature	Specification
	Limit of Moderate Wave Action Delineation	Solid black line 0.0194" (1.4 points) in line weight, with black triangular marker symbols 0.1667" (12 points) in height located on the left-hand-side of the line. Triangles oriented with one edge parallel to the line. Triangles spaced 46 points apart, with first triangle 8 points away from the line's start point.
LIMIT OF MODERATE WAVE ACTION	Limit of Moderate Wave Action Label	10 Pt. Arial, ALL CAPS

Supersedes/Amends:

This guidance amends and supersedes portions of *Procedure Memorandum No. 50 – Policy and Procedures for Identifying and Mapping Areas Subject to Wave Heights Greater than 1.5 feet as an Informational Layer on Flood Insurance Rate Maps (FIRMs)*, dated December 3, 2008

Distribution List (electronic distribution only):

Office of the Assistant Administrator for Flood Insurance and Mitigation

Director, Risk Analysis Division

Director, Risk Reduction Division

Director, Risk Insurance Division

Regional Mitigation Division Directors

Regional Risk Analysis Branch Chiefs

Regional Support Centers

Regional Program Management Liaisons

Legislative Affairs

Office of Chief Counsel

Cooperating Technical Partners

Program Management Contractor

Customer and Data Services Contractor

Production and Technical Services Contractors